A Framework for Generating and Deploying Dynamic Quality Attribute Monitors for Self-Adaptive Software Systems

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Average Load
9560 u/s

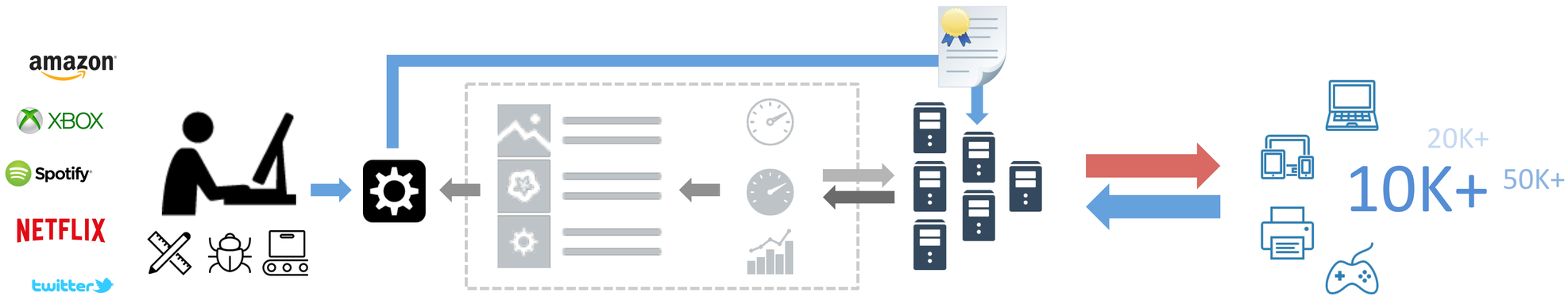
Resource Utilization
95%

Throughput
45 T/s

Transactions
162 KT/h

Response Time
0.34 s

The missing key to effectively ensure Service Level Agreements

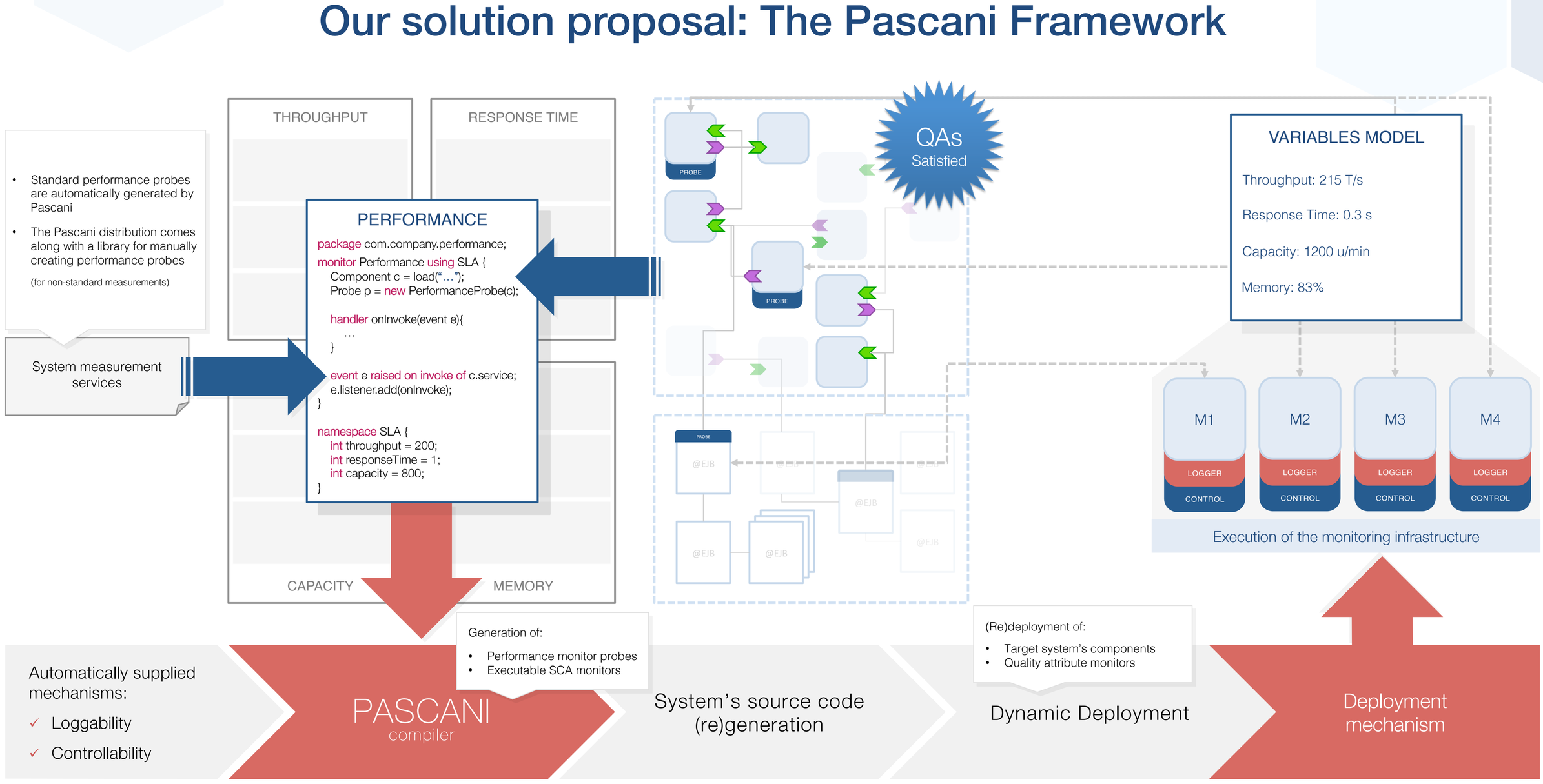


Challenges to overcome

Realize a monitoring infrastructure to continuously measure the satisfaction of the system's quality attributes capable of:

- Dynamically updating its measurement strategies as the managed system's requirements or the environment evolve [1],
- Realizing deployment and integration of monitoring components at runtime, and
- Providing composable, traceable, and controllable monitoring capabilities [2].
- Reporting unified and hierarchical monitoring data with distinct levels of depth.

Our solution proposal: The Pascani Framework



Expected results

- ✓ DSL to specify and execute dynamic monitoring concerns in component-based software.
- ✓ DSL to specify and realize dynamic deployment and integration strategies into a component-based software.
- ✓ Web graphic user library with reporting capabilities to present the measured data
- ✓ Paper introducing a framework for specifying and deploying dynamic quality attributes monitors for self-adaptive software systems.
- ✓ Paper regarding the products derivation and deployment mechanisms at runtime in a Software Product Line by integrating a Self-adaptation approach.

1. Villegas, N. M., Tamura, G., Müller, H. A., Duchien, L., & Casallas, R. (2013). DYNAMICO: A reference model for governing control objectives and context relevance in self-adaptive software systems. In Software Engineering for Self-Adaptive Systems II (pp. 265-293). Springer Berlin Heidelberg.
2. Jimenez, M., Villota Gomez, A., Villegas, N. M., Tamura, G., & Duchien, L. (2014, September). A Framework for Automated and Composable Testing of Component-based Services. In Maintenance and Evolution of Service-Oriented and Cloud-Based Systems (MESOCA), 2014 IEEE 8th International Symposium on the (pp. 1-10). IEEE.